

# Engelmann spruce

*Picea engelmannii*

By Charles L. Bolin

If you happen to hike or hunt in a high-mountain area this fall, take a close look at the tallest trees near timberline. They'll likely be Engelmann spruce, stately and elegant conifers that grow throughout the Rocky Mountains.

## Range and ecology

The Engelmann spruce—named for George Engelmann, a St. Louis physician and botanist—is common across mountainous regions from northern British Columbia to western Montana, west to the Cascade Range of Oregon and Washington, and south, in isolated stands, to Arizona, New Mexico, Colorado, Nevada, and California. Most often found above 3,000 feet, Engelmann spruce thrive where winters are cold and the growing season provides abundant moisture. At higher elevations, it tolerates drier conditions and often grows next to subalpine fir.

In Montana, the species is most common in the Purcell, Salish, Bitterroot, and Little Belt Mountains, and the Swan and Beartooth Ranges. The tall trees also grace neighborhoods in cities and towns across western and central Montana.

Its thin bark makes the Engelmann vulnerable to even low-intensity fires. At the same time, the species is more shade tolerant than many conifers. It can grow for decades under the canopy of fast-growing species such as quaking aspen, allowing it to repopulate after fires or other disturbances such as avalanches or logging.

## Krummholz

Above tree line, the harsh forces of nature compress Engelmann spruce and other

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## Scientific name

*Picea* is derived from the Latin *pix*, or *piceis*, meaning "pitch." *Engelmannii* refers to St. Louis botanist George Engelmann.

conifers into dwarfed trees known as krummholz (German for "crooked wood"). Krummholz provide shelter for wildlife and plants that might not otherwise survive in the windy, cold alpine environment.

## Age

Engelmann spruce are known to live for 300 years or more. A few exceptional individuals have been aged at more than 800 years old.

## Identification

From a distance, look for straight, spire-like trees taller than all others. Under ideal conditions, Engelmann spruce can grow over 160 feet tall in Montana. Up close, the trees are easily identified by the narrow, conical shape; graceful, bowed branches; and thin, reddish bark with loose scales that flake off

easily. The short, bendable, dark green needles are about 1 inch long. The four-sided needles can be rolled between your fingers and emit a pungent odor when crushed. Dense clusters of 2-inch-long cones hang from the upper crown. The cones are bright red in spring, purple in summer, and tan during the rest of the year.

## Roots

This spruce has a shallow root system reaching only about 2 feet into the soil. Lateral roots spread 15 to 20 feet from the base of the trunk. Because of their massive canopies combined with a weak root system, Engelmann spruce often topple in violent mountain windstorms.

## Wildlife value

Like other conifers, Engelmann spruce stands are used as shelter by deer, elk, moose, bears, porcupines, chipmunks, squirrels, mice, and voles, as well as numerous songbirds such as chickadees and nuthatches. The seeds are important food for small mammals and songbirds. The trees also shade high-mountain trout streams and provide pools beneath undercut banks held secure by the roots.

## Uses

For centuries, Native Americans made medicines from Engelmann spruce resin and needles to treat coughs, eczema, and respiratory complaints. They also pounded and shredded the roots to make cord and rope and used the bark for baskets and lodge roofing.

Commercially, the soft, straight-grained, odorless wood is used in timber frame construction. Select specimens are made into guitars, pianos, and violins.

## Conservation status

Old stands of Engelmann spruce are susceptible to infestations by spruce bark beetles, which have grown more abundant during recent warmer, shorter winters. Pine, fir, and spruce bark beetles have ravaged forests across the western United States and Canada. In large areas of southwestern Montana, more than 50 percent of the trees have been killed by the beetles. 🐜